

02228
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PM '68

DEVELOPMENT STAFF
LOS

October 11, 1968

Attention: Ed D.

Subject: Control #02228 - Status Report for
Period Ending September 30, 1968

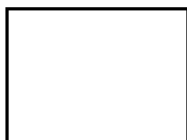
Gentlemen:

During this report period the following tasks have been performed.

1. Work has continued on the design layout of the X and Y coordinate stage motions.
2. A design layout has been started of the Y coordinate precision lead screw and bearing assemblies.
3. Work has continued on the design layout of the X and Y coordinate motor drive units. It has now been determined from this layout that the shaft encoders can be geared directly to the motor drive unit to provide a more compact assembly. Additional design layout is planned to investigate the feasibility of utilizing the same motor drive assembly on each of the twin stage X and Y coordinate motions. The design layout as presently drawn would require that two drive assemblies be manufactured to provide left and right-hand units for use on individual X and Y coordinate stage motions.
4. A preliminary investigation was made to determine the possibility of incorporating the substage illumination assembly for the stereo viewing system in the instrument console. It appears at this writing that this can be done. A final decision cannot be made, however, until the design layout of the console is developed to verify that sufficient space will be available to physically accommodate this light source assembly.
5. The optical design for the substage illumination was not started during this report period as originally planned. This task will be rescheduled when the design layout of the console has progressed sufficiently to verify that the required physical space is available in the console.

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NGA Review Complete



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Without this assurance, any optical design work on the substage illumination could prove to be wasted effort.

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6. A 1.3X [] microscope objective lens was borrowed from the customer during this report period. This objective lens will be used in conjunction with those supplied with the stereo viewer, also on loan from the customer, to aid in the design of a suitable substage illumination system. The 1.3X objective lens has already been used to establish the diameter of the final condensing lens to be located directly below the film plane. This information will be used in the design layouts of the instrument base and stages to assure proper working clearances for the lens and its mount.

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7. Approval of the specification to be used in ordering the [] High Power Stereo Comparator Head was received from the customer on September 30, subject to the inclusion of several modifications. These modifications will be added to the specification prior to submitting it to [] for a written price quotation and delivery date.

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8. A full scale cardboard mockup of the stereo viewing systems, instrument base, stages, and console top was constructed so the human engineering aspects of the eyepoint position for the stereo viewing system and the location of console mounted operator controls could be investigated. The physical dimensions for this mockup were obtained from layout drawings developed after drawing #1740-P1 was submitted to the customer. The floor to eyepoint dimension of 48 in. noted on drawing #1740-P1 was, however, used in the construction of the mockup pending approval from the customer.

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This mockup was available on September 27, when the technical representative Dick S. of the customer staff and [] [] to discuss human engineering design considerations for the twin stage comparator. Suggestions and decisions resulting from this discussion will be explained later in this status report.

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9. Prints of the layout drawings used to construct the full scale mockup described in para. 7 were supplied to the technical representative during his September visit to the []
10. A design layout of the rear section of the overarm was started. It is estimated that approximately 7.5% of the work on the twin stage comparator has been completed as of this report period.

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During the October report period the [] plans to do the following work.

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1. An updated specification for the High Power Stereo Comparator Head will be submitted to [] with a request for a written price quotation and delivery date for one unit manufactured in accordance with this specification. If purchase negotiations with [] can be satisfactorily completed before the end of October, it may be possible to issue a purchase order during the next report period.
2. Work will continue on the design layouts started during previous report periods.
3. Start a design layout of the X coordinate precision lead screws and bearing assemblies.
4. Continue work on the design layout of the X and Y coordinate motor drive assemblies to investigate the possibility of eliminating the need to manufacture left and right-hand units as currently required. If this work is successful, the manufacture and assembly of the motor drive assembly would be simplified and spare parts inventory could be reduced.
5. Start detail pattern drawings for the instrument base and stages.
6. Modify the existing scale mockup of the twin stage comparator to investigate and evaluate human engineering design problems associated with the stereo viewing system and location of the operator controls mounted on the top surface of the instrument console.
7. Invite the technical representative to visit the [] to discuss progress made on the twin stage comparator design during the October report period.

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The technical representative and Dick S. of the customer's staff visited the [] on September 26 and 27. The purpose of this visit was to discuss the August Status Report and human engineering design considerations as related to the twin stage comparator.

During the discussion pertaining to the three alternate courses of action described on page 5 of the August Status Report, the technical representative advised the [] that it was not possible for the customer

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to loan or supply on an exchange basis a [] High Power Stereo Head for use on the twin stage comparator. The technical representative also pointed out that the customer had loaned to the [] a stereo viewer as originally promised. Unfortunately the high power stereo comparator head required for inclusion in the twin stage comparator is a different viewer. Hence, the change in name from stereo viewer to stereo comparator head by []

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Based on the vendor's verbally quoted delivery schedule of 30 weeks, the stereo comparator head cannot now be obtained until after the delivery date of the contract. The [] suggested that it would perhaps be possible to complete the design and manufacture of the twin stage comparator with the exception of the modified stereo comparator head before deferring work on the project. Such a schedule would assure delivery of the completed instrument in the shortest time possible after receipt of the stereo comparator head from []. In discussing this matter with the technical representative, the [] estimated that final delivery would occur several months after that date specified in the contract because of the work required to modify the stereo comparator head after its arrival. This delay would necessitate the need to request an extension of the present contract delivery date. Because of the funds which will have been committed to this contract when it is deferred to await the arrival of the stereo comparator head, the [] also inquired as to the possibility of receiving a partial payment based on the percentage completion of the twin stage comparator at that time. The technical representative stated that in his opinion there was justification for the [] to request a time extension and inquire about a partial payment. He suggested, however, that these requests be submitted directly to the contracting officer after the [] had received a written delivery date from [] for the stereo comparator head and could more accurately estimate the additional time required to complete the contract. The technical representative also made it clear that even though the contract date was extended the customer would accept an earlier delivery date if it were possible for the [] to do so.

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[] on September 27, at the request of the technical representative to discuss human engineering design for the twin stage comparator. Those areas discussed were primarily concerned with the eyepoint to floor dimension of the stereo comparator head, the console, and location of operator controls on the console.

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The [] representative recommended that the nominal viewing angle for the stereo comparator head be changed from 30 deg to 15 deg if in so doing a floor to eyepoint dimension of 47-3/4 in. could be maintained. This change would provide a range of eyepoint positions from approximately 44-1/2 in. to 51 in. due to the variable eyepiece angle adjustment provided on the stereo comparator head. Such a range of potential eyepoint positions would then allow the upper 95% of the female operator population and the lower 95% of the male operator population to use a standard 17 in. fixed height chair for comfortable viewing. Design layout drawings which had been revised during the September report period produced dimensions that agreed with those recommended by the

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[] representative. The cardboard mockup which was constructed to agree with the dimensions was used by the technical representative and

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[] to evaluate the revised design configuration.

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It was mutually agreed that the nominal 15 deg viewing angle and its 47-3/4 in. floor to eyepoint dimension should be provided in the final design of the twin stage comparator. The technical representative suggested that the [] investigate the possibility of increasing the angular swing of the eyepieces an additional 3 deg so they could be positioned more nearly horizontal to more easily accommodate small operators.

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[] recommended that the console knee well depth and height dimensions be increased to 18 in. and 26 in. respectively and the toe clearance at the rear of the console be increased from 3 in. to 4 in. It was decided that 4 in. diameter swivel-type wheels be used on the console and would cause no hardship if they pivoted outside the 34 in. x 48 in. width and length dimensions while moving the instrument from one area to another.

During the discussion pertaining to location of operator controls on the top surface of the console, it became evident that with a 34 in. width restriction there will be insufficient space for a writing surface or for display of collateral materias. It was suggested that by eliminating the eight overtravel indicator lamps and recessing some of the operator controls, space could be provided on the console top for the operator to rest his forearm while operating the instrument. The existing scale mockup will be modified to further explore this possibility. There is also the possibility of applying a shelf to the electrical component rack to provide a suitable writing surface. Every attempt will be made to comply with the recommendations noted above when the instrument console is designed.

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STAT The technical representative suggested that the []
[] to determine if it would be possible to
transfer the character readout switches from the digital control panel
located on the electrical component rack to the instrument console. Their
suggestion will be discussed with [] and the
results reported in the October status report. STAT

A Status of Funds statement will be found on the following page
of this report. STAT

Very truly yours,

[]

Asst. Manager, Engineering

HBB:pc

Attachment: Status of Funds

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